

**We Claim:**

1           1. A method for programming a configurable integrated circuit, comprising the  
2 steps of:  
3           programming a plurality of nonvolatile bits in one or more nonvolatile registers,  
4 each nonvolatile bit or a combination of nonvolatile bits in the plurality of nonvolatile  
5 bits corresponding to an analog function; and  
6           generating a configuration on an integrated circuit from programming the plurality  
7 of nonvolatile bits in the one or more nonvolatile registers.

1           2. The method of Claim 1 wherein the plurality of nonvolatile bits in the one or  
2 more nonvolatile registers comprises E<sup>2</sup> cells.

1           3. The method of Claim 1 wherein in the programming step comprises the step  
2 of enabling an analog function by the nonvolatile bit or the combination of nonvolatile  
3 bits.

1           4. The method of Claim 3 wherein in the enabling step comprises the step of  
2 setting the analog function to a specific value.

1           5. The method of Claim 1 wherein in the programming step comprises changing  
2 pin assignments by programming one or more nonvolatile bits.

23

1           6. The method of Claim 1 wherein the analog function comprises trimming an  
2 internal voltage of the integrated circuit.

1           7. The method of Claim 1 further comprising the step of combining a plurality of  
2 analog signals to generate a digital output.

1           8. The method of Claim 1 further comprising the step of storing a status of a  
2 fault condition of the integrated circuit in the one or more NV registers.

1           9. An integrated circuit, comprising:  
2 one or more nonvolatile registers having a plurality of nonvolatile bits, each  
3 nonvolatile bit or a combination of nonvolatile bits in the plurality of nonvolatile bits  
4 corresponding to programming an analog function; and  
5 a circuit configuration in the integrated circuit being generated from programming  
6 one or more nonvolatile registers.

1           10. The integrated circuit of Claim 9 further comprising a decoder, coupled  
2 between the one or more nonvolatile registers and a circuit configuration, for decoding  
3 the plurality of nonvolatile bits for programming analog functions.

1           11. The integrated circuit of Claim 9 wherein the plurality of nonvolatile bits  
2           comprises E<sup>2</sup> cells.

1           12. The integrated circuit of Claim 9 wherein the nonvolatile bit or the  
2           combination of nonvolatile bits in the one or more nonvolatile registers enables the  
3           analog function.

1           13. The integrated circuit of Claim 12 wherein the nonvolatile bit or the  
2           combination of nonvolatile bits in the one or more nonvolatile registers sets a specific  
3           value to the enabled analog function.

4           14. The integrated circuit of Claim 9 wherein the nonvolatile bit or the  
5           combination of nonvolatile bits in the one or more nonvolatile registers changes pin  
6           assignments of the integrated circuit.

1           15. The integrated circuit of Claim 12 where the bit or the combination of  
2           nonvolatile bits trims an internal voltage of the enabled analog function.

1           16. The integrated circuit of Claim 9 further comprising a logic gate for  
2           combining a plurality of analog signals to generate a digital output.

1 17. A configurable device, comprising:  
2 means for programming one or more nonvolatile registers having a plurality of  
3 nonvolatile bits, each bit or a combination of bits in the plurality of nonvolatile bits  
4 corresponding to an analog function; and  
5 means for generating a configuration from programming the plurality of  
6 nonvolatile bits.

1 18. The configurable device of Claim 17 wherein the programming means of the  
2 one or more nonvolatile registers comprises E<sup>2</sup> cells.

1 19. The configurable device of Claim 17 wherein the programming means  
2 comprises enabling the analog function.

1 20. The configurable device of Claim 17 wherein the programming means  
2 comprises selecting a specific value of the analog function.